

REMARKS

The application has been amended and is believed to be in condition for allowance.

There are no formal matters outstanding.

Applicants acknowledge with appreciation that the Official Action indicated that claims 2-6 and 8 were directed to allowable subject matter.

In reliance thereupon, claims 11-17 are presented. Claim 11 corresponds to a combination of previously pending claim 1 and allowable claim 2. Accordingly, allowance of claim 11 is solicited.

Claims 12-16 correspond respectively to previously pending claims 3-7 and their allowance is also solicited.

New claim 17 corresponds to a portion of prior claim 8 and as this claim depends from allowable claim 11, it is also believed to be allowable.

Independent claims 1 and 9 have been amended. The amended claims are believed to be both novel and non-obvious over the prior art. These amendments are supported by Figure 2. In these amendments, the claims recite that an impedance of a current path in a current switching device (e.g. a current mirror) makes electrical potential of different parts to float in respect to each other, i.e., the impedance makes isolation of electrical potentials. In a solution based on an optical isolator, isolation of electrical potentials is based on an

electrically non-conductive region between an optical transmitter and an optical receiver, i.e., isolation of electrical potentials is based on galvanic isolation. Galvanic isolation is also isolation of electrical potentials but isolation of electrical potentials is not necessarily galvanic isolation.

An impedance of a current path in a current switching device performs isolation of electrical potential since said impedance is high, i.e., dl/dU is near zero, wherein l is a current through the current switching device and U is a voltage over the current switching device, i.e., if the voltage U is changed, an incurred change in the current l is very small. A current switching device does not prevent a flow of current, i.e., it does not make galvanic isolation, but a current switching device prevents changes of said current due to voltage variations over said current switching device, i.e., a current switching device makes only isolation of electrical potentials.

An optical isolator makes galvanic isolation and thus it prevents a flow of current. There is indeed a high impedance in an optical isolator between an optical transmitter and an optical receiver, but this high impedance is not in a flowing path of (electric) current. Therefore, an optical isolator does not perform isolation of electrical potentials based on an impedance of a flowing path of current. Therefore, the above-mentioned amendments make a clear difference between a solution

according to the present invention and a solution that is based on an optical isolator (BLASZYKOWSKI).

Thus, in the prior art, e.g., BLASZYKOWSKI, an optical isolator performs isolation of electrical potentials based on galvanic isolation. In contrast, the recited current switching device performs isolation of electrical potentials based on impedance of a flowing path of current.

Claims 1, 7, 9 and 10 were rejected as anticipated by BLASZYKOWSKI et al. 5,125,027.

As noted above, each of independent claims 1 and 9 are believed to be both novel and non-obvious over the prior art in general and over this applied reference in particular.

The amended claims, as discussed above, more distinctively recite the difference between the invention and the cited reference of BLASZYKOWSKI.

These additions make a difference between the claimed invention and the cited reference to BLASZYKOWSKI by pointing out the different approach to isolation between the two. In the description (for example, page 2, lines 3-5), there is disclosed how one of the basic requirements of an OLIC is to separate electrically the components connected to the telephone line, which float in relation to the local ground potential, and the components of the OLIC and the digital transfer connection, which are dependent on the local ground potential.

BLASZYKOWSKI takes the conventional approach to isolation and utilizes optoisolators; see optoisolators 70 and 74 in Figure 2A of BLASZYKOWSKI. An optoisolator is an isolator in the very essence of the concept, because it implements galvanic isolation between its input and output circuits. In the present invention, optoisolators are not used but the necessary electric isolation is implemented by using current control, which by definition involves very high impedances. The high-impedance interface between the current mirrors and the current amplifier(s) in circuits according to the present invention implements the required level of electric isolation. In other words, said high-impedance interface (together with the high impedance of the differential amplifiers 210, 350, and 351) makes the left-hand side of the circuit in Figures 2 and 3 float in potential with respect to the rest of the circuit.

This feature is now clearly recited.

Applicants underline that the mere idea of implementing electric isolation and potential floating is not new and indeed is a basic requirement of OLIC circuits, as can be seen even in BLASZYKOWSKI. However, an important part of the present invention is to combine said electric isolation with the (current mode) control of the looping amplifier, which is something that prior art constructors have not presented or suggested.

One remarkable advantage of said isolation aspect of the invention is that the optoisolators are omitted altogether.

The performance of an optoisolator is known to degrade in the course of time, which makes a coupling that relies on the amplification factor of an optoisolator relatively unreliable. In the circuit of the present invention, such aging problems are completely avoided, because the current mode control more or less mandatorily comes with a high impedance, which is sufficient for implementing the required electric isolation.

From the above, applicants believe that the independent claims 1 and 9 patentably recite the present invention in that the structure recited therein is both novel and non-obvious over the prior art in general and the applied reference in particular. Accordingly, reconsideration and allowance of claims 1 and 9 and the claims depending therefrom are respectfully requested.

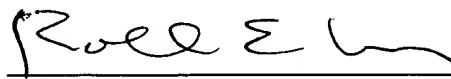
Applicants believe that the present application is in condition for allowance and an early indication of the same is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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